A DEDICATED PATH TO EMERGENT THORACIC SURGERY IN COVID-19 PATIENTS: AN ITALIAN INSTITUTION PROTOCOL

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Abstract

The outbreak of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) pandemic pointed out that the need to ensure emergent surgery in positive for infection patients is no longer hypothetical. Among emergency procedures, thoracic surgical operations are frequent. A standardized surgical pathway is mandatory in order to achieve effective and safe management of this subset of patients. We briefly present the protocol adopted by our thoracic surgery division.

The current Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) pandemic [1] is stressing the need to design alternative care pathway for COVID-19 test confirmed patients eligible for urgent or emergent surgical intervention. Because of the recent huge spread in the SARS-CoV-2 in Italy, the occurrence of active infection in patients presented to the emergency department with conditions requiring surgery, with particular reference to thoracic surgery, is progressively increasing. Up to now, no clear guidelines for the management of this peculiar subgroup of patients has been produced. Thanks to the protocol developed together with the local task force consensus, and in agreement with regional and ministerial orders, [2,3] we started a dedicated route to surgery for SARS-CoV-2 patients that require unavoidable thoracic surgical operations, [4] including rigid bronchoscopy to manage airway emergency procedures, open and video-assisted thoracic surgeries for post-traumatic/iatrogenic conditions. Here below is the complete text of such a protocol. TECHNIQUE Logistic An independent 24/7 surgical facility has been appointed and dedicated to emergent and urgent surgical patients test positive for COVID-19. This latter consists of five distinct operating rooms (OR) equipped to carry out different surgical procedures. The single pressure negative OR has been destined for rigid bronchoscopy. Dressing rooms have been adjusted to the high safety standards required for donning single-use personal protective equipment. Dressing rooms are equipped with showers, towels and other facilities; lockers are also available to store personal belongings and clothes. 4 Signs and advertising boards have been installed in order to identify free-access, limitedaccess areas and filter zone. Access control and paths to the OR - Access to the OR is strictly limited to authorized health professionals. Trainees and students are not allowed to enter. - The number of personnel involved in each case must be curtailed. - Inbound and outbound OR personnel travel must be limited to essential activities. - The outer envelope of any equipment and supply must be removed in the freeaccess area. - Use reserved and separate paths to process contaminated or unclean surgical equipment and supplies. Instruments are processed in the usual manner but these must be transported to the wash and sterilization area through sealed and properly marked container. Times of prepping and ridding clean and contaminated equipment respectively need to be diversified whenever the structure of the OR environment does not allow separate paths. - Pathology specimen (including frozen section analysis when necessary) must be transported through sealed and marked container, and the pathology team has to be alerted in advance in order to allow them the safe handling sample management. - The transportation in and out of the surgical unit of the patient tested positive for COVID-19 must be performed through specific lifts that have been designated for COVID-19's dedicated wards and the intensive care unit floor respectively. - The transport team must be coordinated by the OR Manager and the surgical staff. 5 - Patients must be provided with personal protective equipment (surgical mask, isolation gown), keep the hair up with a cap and be covered with clean blankets during transportation. Behavioral norms for OR staff Attendance at limited-access areas must be restricted to health personnel actively involved in the surgical procedure. - Spoliation from personal scrubs and donning disposable scrubs and protective equipment must be performed in dedicated men's and women's dressing room. Personal belongings must be stored in the lockers. - Wear clothing appropriate for the surgical area you are in. Protective equipment specialty kits are available for each surgical team and cleaning personnel; every kit includes FFP2 NR D masks, disposable scrubs, isolation gowns or suits, face shield or goggles, overshoes). Shift manager nurse is responsible for resupplying of the equipment. - Involved personnel should limit inbound and outbound travels to activities essential for the surgical procedure in order to reduce the dissemination on surfaces of airborne contamination, which could be responsible for the infection of other health professionals. - The number of staff present during airway manipulation must be limited to the strict minimum; surgeons are not involved whenever possible. - OR door opening should be limited to the necessary during the operation. - Surgery and postoperative monitoring must be performed in the assigned operating

theatre. - Spoliation from protective dirty equipment must be performed into the dedicated area. 6 Emergency protocol activation The surgeon: - is responsible for alerting the anaesthesiologist manager or the shift manager who in turn is responsible for informing the surgical unit manager nurse, the surgical team and auxiliary personnel, the transport team and the transfusion center. The dedicated 24/7 duty team consists of one anaesthesiologist and two OR nurses per room. - is also responsible for notifying the case to the anaesthesiologist on duty for surgical emergencies, who will provide the preoperative risk assessment depending on the severity of the emergent situation. COMMENT The present protocol [4] is currently in use at our General University Hospital. These guidelines must apply to confirmed COVID-19 patients both admitted to hospital or presenting to the emergency department. Planning and timing for the procedure is demanded to the operating surgeon and the anaesthesiologist involved. In the case of unconfirmed Covid-19 diagnosis, surgery should be delayed until the buffer result is obtained where possible, whereas the path to be used for unavoidable emergency must be discussed by a multi-disciplinary team on the basis of clinical, radiological and laboratory findings. The need for intubation shall be assessed case-by-case in relation to the procedure to be performed, its duration and invasiveness. When lung isolation is required, both double lumen tube or bronchial blocker can be used. The adoption of such a model may be helpful to better face emergent events in COVID19 patients, thus allowing far safer management of even emergent thoracic surgery. The essential objective of these rules is to improve the use of the emergency department 7 resources with a consistent eye on the protection of the health professionals. Since the existing emergency, staff regulations did not impose any age-limit, however occupational health service actually excluded from exposure to infected patients those health professionals considered to be at risk due to their clinical history. Moreover, no infection has been diagnosed in the personnel adhering to these protocol for emergent surgery in COVID-19 patients.

REFERENCES 1. Heymann DL, Shindo N; WHO Scientific and Technical Advisory Group for Infectious Hazards. COVID-19: what is next for public health? Lancet. 2020 Feb 22;395(10224):542-545. doi: 10.1016/S0140-6736(20)30374-3. Epub 2020 Feb 13.